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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|-------------------------|---------------------|------------------|
| 10/816,697 | 04/05/2004 | Richard Scott Bourgeois | 126533-1 | 9731 |

6147 7590 10/01/2007
GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH
PATENT DOCKET RM. BLDG. K1-4A59
NISKAYUNA, NY 12309

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| EXAMINER |
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CHUO, TONY SHENG HSIANG

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| ART UNIT | PAPER NUMBER |
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1745

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| MAIL DATE | DELIVERY MODE |
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10/01/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|-----------------|------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/816,697 | BOURGEOIS ET AL. | |
| | Examiner | Art Unit | |
| | Tony Chuo | 1745 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 1-18 and 27-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-26 and 30-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn. Claims 1-36 are currently pending. Claim 37 has been cancelled. Claims 1-18 and 27-29 are withdrawn from further consideration as being drawn to a non-elected invention. The objection to claims 34-37 is withdrawn. The previously stated 112 rejection of claims 19-26 and 31-37 is withdrawn. The amended claims do overcome the previously stated 103 rejections. However, upon further consideration, claims 19-26 and 30-36 are rejected under the following new 102 and 103 rejections.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 19-23, 25, 26, and 30-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Sasaki et al (US 5378247).

Regarding claim 19 and 34, the Sasaki reference discloses a fuel cell stack comprising: a first fuel cell assembly "1" & "21" and a second fuel cell assembly "1" & "21" electrically coupled together such that sealed manifolds extend between the first and second fuel cell assemblies, the first and second fuel cell assembly each

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comprising: at least one hollow manifold comprising a top wall "24" and a bottom wall "23" that each extend between a first end and a second end wherein the top and bottom walls comprise small holes "23a" & "24a" extending there through in flow communication with the hollow manifold; and a fuel cell "1" comprising an anode "3", a cathode "2", and an electrolyte "4" disposed there between, wherein the fuel cell "1" is disposed on the bottom wall "23", and wherein a portion "27" & "28" of each of the top wall and the bottom wall, immediately adjacent to both the fuel cell and the sealed passage are configured have a high flexibility compared to the fuel cell to release the stress between the fuel cell, the top and bottom walls, and the sealed passage caused by temperature rise involved in the operation of the fuel cell (See Figures 1 and 3, column 5 line 40 to column 6 line 9, and column 7, lines 3-11).

Regarding claim 20, it also discloses a cathode flow channel coupled to the hollow manifold of the first fuel cell assembly and the second fuel cell assembly that is configured for directing an oxidant between the first fuel cell assembly and the second fuel cell assembly (See Figure 1).

Regarding claim 21, it also discloses a hollow manifold that is substantially rectangular (See Figure 1).

Regarding claim 22, it also discloses a hollow manifold that further comprises an electrically conductive material "22" (See column 5, line 58).

Regarding claim 23, it also discloses a molten carbonate fuel cell (See column 1, lines 6-10).

Regarding claim 25, it also discloses thermal deformation of the fuel cell components (See column 6, line 59).

Regarding claims 26, 30, and 31, it also discloses separator components that are thin plates that are welded which implies that the separator components are metal (See column 12, lines 42-45). In addition, it well known in the art that molten carbonate fuel cells comprise ceramic materials and materials of different thermal coefficients of expansion. Therefore, the thermal coefficients of expansion of the fuel cell and the top and bottom walls are different.

Regarding claims 32 and 33, it also disclose the top wall "22" and bottom wall "23" of the hollow manifold that act as an anode interconnect (See Figure 1).

Regarding claims 35 and 36, it also discloses portions of each of the top wall and the bottom wall immediately adjacent to the fuel cell and the sealed passages are configured to have separate corrugated structures to accommodate a difference in strain between the fuel cell, the top wall, the bottom wall, and the sealed passages (See Figure 21).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 19 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barnett et al in view of Sasaki et al (US 5378247).

The Barnett reference discloses a solid oxide fuel cell stack comprising a plurality of unit fuel cells "13" and a plurality of interconnects "12" that form a plurality of fuel cell assemblies that are electrically connected together such that at least one sealed passage "26" extends between the plurality of fuel cell assemblies, wherein each fuel cell assembly comprises: a hollow manifold comprising an upper sheet "16" and lower sheet "18" that extend between a first end and a second end and comprises openings "29","31","32" extending there through in flow communication with the hollow manifold; and a fuel cell comprising an anode "36", a cathode "38", and an electrolyte "37" disposed there between with the fuel cell disposed on the lower sheet "18" (See column 2, lines 21-55 and Figures 3 and 4).

However, Barnett et al does not expressly teach a portion of each of the top wall and bottom wall immediately adjacent to the fuel cell and the sealed passage that are configured to have lower stiffness compared to at least one of the fuel cell and the sealed passage to accommodate a strain between the fuel cell, top and bottom walls, and the sealed passage.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Barnett interconnect to include a portion of each of the top wall and bottom wall immediately adjacent to the fuel cell and the sealed passage that are configured to have lower stiffness compared to at least one of the fuel cell and the sealed passage to accommodate a strain between the fuel cell, top and

bottom walls, and the sealed passage in order to utilize an interconnect structure that releases stress due to temperature rise involved in the operation of the fuel cell.

Response to Arguments

6. Applicant's arguments, see Remarks/Arguments, filed 9/24/07, with respect to the rejection(s) of claim(s) 19-26 and 30-37 under 35 USC 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Sasaki et al (US 5378247).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571) 272-0717. The examiner can normally be reached on M-F, 7:00AM to 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC



JONATHAN CREPEAU
PRIMARY EXAMINER